Unconsolidated Aquifer Systems of Tipton County, Indiana

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Four unconsolidated aquifer systems have been mapped in Tipton County: the Till Veneer; the Tipton Till; the Tipton Till Subsystem; and the Tipton Complex. The southern portion of Tipton County has been described and mapped as part of a previously published regional basin study report (Ground-Water Resources in the White and West Fork White River Basin, Indiana). Boundaries of all aquifer systems described are commonly gradational, and individual aquifers may extend across aquifer system boundaries.

The thickness of unconsolidated deposits in Tipton County is quite variable, because glacial material has been deposited over an uneven bedrock surface. The thickness of unconsolidated deposits ranges from about 25 feet in the northeast portion of Tipton County to over 250 feet in the southwest portion of Tipton County.

Regional estimates of aquifer susceptibility to contamination from the surface can differ considerably from local reality. Variations within geologic environments can cause variation in susceptibility to surface contamination. In addition, man-made structures such as poorly constructed water wells, unplugged or improperly abandoned wells, and open excavations, can provide contaminant pathways that bypass the naturally protective clays.

Till Veneer Aquifer System

In Tipton County, the Till Veneer Aquifer System encompasses areas where the unconsolidated material is predominantly thin till overlying an eroded bedrock surface. This system has the most limited ground-water resources of the unconsolidated aquifer systems in the county and is mapped in the northeastern corner of Tipton County. Total thickness of the Till Veneer Aquifer System generally ranges from about 25 to 50 feet.

There is little potential for ground-water production in the Till Veneer Aquifer System in Tipton County. Potential aquifer materials include thin isolated sand and/or gravel layers. However, none of the reported wells penetrating this aquifer system are completed in unconsolidated materials, which are bypassed in favor of the underlying bedrock. The Till Veneer Aquifer System is not very susceptible to contamination from surface sources because the near-surface materials generally have low permeability.

Tipton Till Aquifer System

In Tipton County, this aquifer system ranges in thickness from about 50 feet in the eastern and northeastern portion of the county to over 250 feet in the southwestern portion of the county.

Wells completed in the Tipton Till Aquifer System are capable of meeting the needs of most domestic and some high-capacity users in Tipton County. However, approximately 22 percent of wells started in this system utilize the underlying bedrock aquifer. Saturated aquifer materials include sand and/or gravel deposits that are commonly 5 to 10 feet thick and are generally overlain by 75 to 140 feet of till. Wells producing from the Tipton Till Aquifer System are typically 80 to 150 feet deep. Domestic well capacities are commonly 10 to 60 gallons per minute (gpm). Static water levels generally range from 5 to 20 feet below the surface. There are 3 registered significant ground-water withdrawal facilities (total of 10 wells) with reported yields of up to 745 gpm. Uses for these facilities are public water supply and energy production. Refer to the table for some details on the wells and to the map for the facilities location.

The Tipton Till Aquifer System typically has a low susceptibility to surface contamination because intratill sand and gravel units are commonly overlain by thick glacial till. Shallow wells completed in this system are moderately susceptible to contamination.

Tipton Till Aquifer Subsystem

Areas where unconsolidated materials are generally greater than 50 feet in thickness, yet have limited aquifer potential, are mapped as the Tipton Till Aquifer Subsystem in the county. The unconsolidated material in this subsystem ranges from about 50 to 200 feet thick in Tipton County. Potential aquifer materials include intratill sand and gravel deposits. Where present, aquifer materials are typically capped by till that is commonly 45 to 85 feet thick.

More than 80 percent of wells started in the Tipton Till Aquifer Subsystem in this county are completed in the underlying bedrock aquifer system. However, this subsystem is capable of meeting the needs of some domestic users in the county. The few wells producing from the Tipton Till Aquifer Subsystem are generally completed at depths of 50 to 95 feet. Intratill sand and gravel aquifer materials are typically 5 to 10 feet thick. Reported well yields generally range from 5 to 25 gpm and static water levels are commonly 45 to 90 feet below the surface.

This subsystem is generally not very susceptible to surface contamination because intratill sand and gravel units are overlain by thick till deposits. However, in some areas where aquifers are shallow and overlying clay deposits are thin, the system is at moderate risk.

Tipton Complex Aquifer System

The Tipton Complex Aquifer System is characterized by unconsolidated deposits that are quite variable in materials and thickness. Aquifers within the system range from thin to thick and include single or multiple intratill sands and gravels. The aquifers are highly variable in depth and lateral extent and are typically confined by thick clay layers. Total thickness of the Tipton Complex Aquifer System generally ranges from about 100 to over 250 feet in Tipton County.

This system is capable of meeting the needs of domestic and some high-capacity users in Tipton County. However, approximately 15 percent of wells started in this system utilize the underlying bedrock aquifer. The most utilized aquifer layers in the Tipton Complex Aquifer System are generally 5 to 20 feet thick sands and/or gravels overlain by a till cap which is commonly 85 to

125 feet thick. Wells in this system are typically completed at depths ranging from 90 to 130 feet. Domestic well yields are commonly 10 to 75 gpm and static water levels are generally 5 to 20 feet below the surface.

The Tipton Complex Aquifer System is not very susceptible to contamination where overlain by thick clay deposits. However, in some areas where surficial clay deposits are thin, the shallow aquifer, if present, is at moderate to high risk.

Map Use and Disclaimer Statement

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